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For a thriving New England

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February 2, 2020

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Via Email

RE: Comments of Conservation Law Foundation, Inc. on Draft Permits for Sprague Quincy and Sprague TRT Terminals

Permit # MA0020869; MA0028037

Dear Ms. Tracy:

Conservation Law Foundation ("CLF") submits this letter, and attached Declarations of Dr. Wendi Goldsmith and Dr. Robert M. Roseen, in response to the Environmental Protection Agency's ("EPA") December 4, 2020 request for comment on its Draft Permits for the (i) Sprague Quincy Terminal, Permit #MA0020869 ("Sprague Quincy Permit") and Sprague Twin Rivers Technology Terminal, Permit #MA0028037 ("Sprague TRT Permit") (collectively "Draft Permits").[1] CLF is a nonprofit organization devoted to protecting New England's environment for the benefit of all people. For over half a century, we have used law, science, and the market to create solutions that preserve our natural resources, build healthy communities, and sustain a vibrant economy.

As described in detail herein, Section I.C.1.b.6 of the Draft Permits concerning "minimizing impacts from stormwater discharges from major storm events that cause extreme flooding conditions" improperly limits the permittees' existing duties to design, construct, operate, and maintain their facilities in a manner that avoids flooding and damage from the reasonably anticipated impacts of climate change, as one among other weather driven factors, during the facilities' design life. The 2013 Sprague Quincy Terminal permit ("2013 Permit"), the 2011 Sprague TRT Terminal permit ("2011 Permit") (collectively, "Prior Permits") adopted a "good engineering practices" standard for developing pollution control measures and preparing of the Stormwater Pollution Prevention Plan ("SWPPP"). 2011 Permit § I.C.2 ("The SWPPP shall be prepared in accordance with good engineering practices and shall be consistent with the general provisions for SWPPPs included in the most current version of the MSGP."); 2013 Permit

[1] CLF also expressly incorporates as part of this letter all of the sources and materials cited in this letter and attached declarations. A complete list of the sources and materials included herein can be found in the attached Bibliography and Appendix.

§ I.C.3 (same). To comply with these and other provisions of the Draft Permits, permittees must develop enforceable measures to address the risks of flood-induced contaminated stormwater discharges and chemical disasters as a component of their legally binding SWPPP and to prevent violations of other effluent limits as well as water quality standards. As explained below and in the attached Declarations, good engineering standards dictate that durable infrastructure be designed to withstand anticipated weather and climate-related risks, including the risks posed by climate-change-induced severe weather, sea level rise, and storm surge.

EPA should not adopt the proposed language of Section I.C.1.b.6 of the Draft Permits because it appears to unlawfully narrow the scope of necessary consideration of flood risk from the Prior Permits in violation of the Clean Water Act's ("CWA") anti-backsliding provision. Accordingly, the Agency should strengthen the proposed language in Section I.C.1.b.6 by underscoring existing obligations requiring applicants to use good engineering practice, disclose information in their possession, consider all reasonably available data and information, and thoroughly document present-day and future flood risks, such as hurricane storm surge and high tides, extreme precipitation, known and committed sea level rise, and historic flood incidents. EPA should further underscore that applicants must include specific enforceable design, operation, and maintenance measures in their SWPPPs to fully address identified risks of pollutant discharges. Relying upon the self-reported data and information contemplated in this proposal, EPA should evaluate the universe of permitted facilities at risk of flooding and prioritize inspections, outreach, technical assistance, and compliance resources to the most vulnerable facilities.

Further, EPA's updated monitoring requirements for polycyclic aromatic hydrocarbons (PAHs) are inadequate. As EPA is aware, PAHs are potent carcinogens—or enhance carcinogenic effects of other compounds—that are commonly present in stormwater discharges from petrochemical facilities. *See, e.g.*, Sprague Quincy Permit, Fact Sheet at 26. Moreover, PAHs are potent at extremely low concentrations, well below the 0.1 µg/L ML for Group I PAHs included in the Draft Permits. Despite EPA's recognition of prior persistent PAH levels at both Terminals and the insufficiency of prior monitoring requirements, the Draft Permits still (i) set the Minimum Level ("ML") for Group I PAHs at 0.1 µg/L and Group II PAHs at 5 µg/L, (ii) require only a single sample be taken per reporting period, and (iii) change the monitoring frequency for all PAHs but benzo(a)pyrene to once per year. As described below and in the attached Roseen Declaration, these MLs are orders of magnitude greater than the Water Quality Standards for these PAHs and well-above the minimum detection limit available in standard laboratory testing for PAHs.

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I. Climate Change Poses an Imminent and Certainly Impending Threat to the Terminals

A. Government, Industry, and Engineers Alike Recognize the Risk Posed by Climate Change to Industrial Infrastructure

There is widespread consensus that climate change has already caused dramatic changes in the frequency and severity of precipitation and major storms, including severe tropical storms responsible for storm surges and flooding, has caused and contributed to sea level rise, and has dramatically shifted air, water, and surface temperatures. Increased impacts in the near and long-term are already guaranteed as a result of emissions to-date and will be severely exacerbated by continued reckless emissions of greenhouse gases. It is beyond any reasonable dispute that climate disruption poses severe risks to riverine and coastal infrastructure. The devastation wrought in recent years by Hurricane Harvey and Superstorm Sandy spotlight the dangers to private and public infrastructure throughout the country. For example, among many other disastrous impacts of the storm, the Arkema facility in Houston caught fire and exploded after flood waters breached the facility during Hurricane Harvey. The Shell facility in Sewaren, New Jersey spilled 378,000 gallons of oil after tidal surge damaged its bulk storage tanks during Superstorm Sandy. The devastation caused by releases of stored petroleum products from the Murphy Oil facility in New Orleans as a result of Hurricane Katrina still resonates as a signal example as well. The risks and costs to industrial and community infrastructure have been brought starkly into the public eye through reports by the Union of Concerned Scientists [Rising Tides Rising Risks] and by the Center for Climate Integrity as well. *See generally* The Center for Climate Integrity Resilient Analytics, *High Tide Tax: The Price to Protect Coastal Communities from Rising Seas* (June 2019), *available at* https://climatecosts2040.org/files/ClimateCosts2040_Report.pdf. These risks have been underscored by industry as well. *See Effectively addressing climate risk through adaptation for the Energy Gulf Coast* (Oct. 2010), *available at* https://www.entergy.com/userfiles/content/our_community/environment/GulfCoastAdaptation/report.pdf

The flooding risks to infrastructure are well recognized by the United States government, as detailed in the Goldsmith Declaration. For example, the Army Corps of Engineers—the preeminent governmental engineering organization in the country—issued a regulation in 2013 entitled "Incorporating Sea Level Change in Civil Works Programs." That regulation states:

> [Sea level change] can cause a number of impacts in coastal and estuarine zones, including changes in shoreline erosion, inundation or exposure of low-lying coastal areas, changes in storm and flood damages, shifts in extent and distribution of wetlands and other coastal habitats, changes to

> groundwater levels, and alterations to salinity intrusion into estuaries and groundwater systems.

Army Corps of Engineers, Regulation No. 1100-2-8162, at B-1 (Dec. 31, 2013), *available at* https://www.publications.usace.army.mil/Portals/76/Publications/EngineerRegulations/ER_1100-2-8162.pdf. Indeed, the Army Corps of Engineers acknowledges that sea level change is likely to impact coastal projects, and "[a]s a result, managing, planning, engineering, designing, operating, and maintaining for [sea level change] must consider how sensitive and adaptable 1) natural and managed ecosystems and 2) human and engineered systems are to climate change and other related global changes." *Id.* at 2.

The EPA itself has similarly recognized the danger even before drafting the major storm provision in Section I.C.1.b.6. In its Framework for Protecting Public and Private Investment in Clean Water Act Enforcement Remedies, EPA stated: "Extreme weather events, such as storms, floods, and droughts, pose significant risks to water infrastructure and water pollution control measures, and these risks are likely to affect the ability of regulated entities to comply with CWA requirements over time" and that, in appropriate circumstances, "EPA will require as part of the remedy that regulated entities implement resilience and adaptation measures based on the results of . . . vulnerability assessments and the expected useful life of the infrastructure in question, as needed to ensure long-term compliance with the CWA." *Id.* at 6. It concludes, "[I]t is important for each regulated entity to assess its own vulnerability and consider a range of options that address its particular obligations and goals as well as resource challenges." *Id.* at 9.

The regulated community similarly recognizes the risks to their infrastructure posed by climate change. Corporations—from oil majors, chemical companies, and Wall Street—have all issued statements describing the threats posed by climate-change induced severe weather. *See* Goldsmith Dec. ¶¶ 37-49. Similarly, the engineering profession responsible for designing the infrastructure has developed specific guidelines for incorporating climate resilience into that infrastructure. *See* Goldsmith Dec. ¶¶ 50-62.

As a result of this consensus, "any asset/project owner, and by extension any reasonable engineer tasked with design and/or operations of durable infrastructure and other complex facilities, will find it necessary to analyze the potential anticipated climate-change-related threats to the asset throughout its design life." Goldsmith Dec. ¶ 64.

B. The Terminals Are At Particular Risk From Severe Weather

Both of the Terminals are located on the Town River in Quincy, Massachusetts, with the Sprague TRT Terminal near the confluence of the Town River and the Weymouth Fore River.

The Sprague Quincy Terminal includes twelve above-ground storage tanks with a combined capacity of 28.3 million gallons holding jet fuel, diesel fuel, kerosene, No. 2 fuel oil, and No. 6 fuel oil. It also contains twelve additional ground storage tanks for additives. The Draft Permit states that the facility is surrounded by a concrete containment berm and each storage tank is surrounded by a secondary containment berm. The terminal borders public recreation areas to the east, a marina to the west, and a large residential environmental justice neighborhood immediately to the south. Immediately across the Town River to the North and East is the Broad Meadows Marsh—a 106-acre salt marsh that was restored by the U.S. Army Corps of Engineers at a cost of approximate $6 million.[2]

The Sprague TRT Terminal includes ten above-ground storage tanks with capacities between 1 million and 4.2 million gallons, and two smaller above-ground storage tanks. Sprague stores No. 2 fuel oil and diesel fuel in four tanks and leases six tanks to the adjoining Twin Rivers Technology facility holding vegetable oil, glycerin, and beef tallow. The Draft Permit states that the facility is surrounded by a concrete containment berm and each storage tank is surrounded by a secondary containment berm. The terminal borders a public beach and a residential, environmental justice neighborhood to the east.

Both Terminals are at high risk of inundation from a major storm. The Terminals lie within the FEMA 100-year floodplain. Both Terminals are predicted to flood at the National Weather Service minor impact threshold.[3] The Sprague TRT Terminal is predicted to flood under a one-foot sea level rise scenario.[4] The Sprague Quincy Terminal is predicted to flood at three feet of sea level rise.[5] Both Terminals are rated as the highest flood risk by the First Street Foundation Flood Factor.[6] The City of Quincy's 2019 Multi-Hazard Mitigation Plan identifies the terminals as at risk of flooding under both the 2030 Boston Harbor Model for 2030 flood levels and from one foot of sea level rise.[7]

Flooding at the Terminals would be catastrophic to the surrounding area. As described in the Goldsmith Declaration:

> [B]oth terminals operated by Sprague in Quincy, MA store, handle, and/or process hydrocarbons in close proximity to residential and recreational areas with heavy public use and high habitat functions. Multiple marinas, small boat access points, playgrounds, athletic fields, community walking

[2] https://www.nae.usace.army.mil/portals/74/docs/topics/broadmeadows/factsheet.pdf
[3] https://tidesandcurrents.noaa.gov/inundationdb/
[4] *Id.*
[5] *Id.*
[6] https://floodfactor.com/property/address/252312157_fsid; https://floodfactor.com/property/740-washington-street-quincy-massachusetts/252313024_fsid
[7] "City of Quincy Multi-Hazard Mitigation Plan." City of Quincy, (Apr. 2, 2019) at Maps 5.1E, 5.2E, *available at* https://www.quincyma.gov/civicax/filebank/blobdload.aspx?t=49408.06&BlobID=33813

> paths, and publicly accessible open space on both banks of the Town River draw people to the area beyond local residents. Shellfishing indicators were noted including stored lobster traps and active clam digging (observed multiple shell fisherman the afternoon of 27 January). Significant migratory waterfowl were observed including geese and ducks.

Goldsmith Dec. ¶ 10. Dr. Goldsmith explains that "segments of the Town River waterfront once used for industrial purposes have been converted for use as small boat marinas, apartment complexes and in-fill housing, athletic fields, playgrounds, walking trails, historic sites marked with interpretive signs, schools, etc." *Id.* ¶ 69. Also, millions of dollars in federal funds were used to restore the Broad Meadows Marsh area, *id.*, directly across the Town River from the Sprague Quincy Terminal.

However, the success of the redevelopment of the area surrounding the Terminals greatly increases the consequences resulting from a spill into the environment. *Id.* 69-70. As Dr. Goldsmith concludes, "increasing climate related threats combined with increasing levels of exposure heighten risk of harm to human health and the environment." *Id.* ¶ 10. Dr. Goldsmith further notes that the development in the surrounding area has, consistent with good engineering practices, taken climate change risks into account. *See* Goldsmith Dec. ¶ 71. However, the Terminals appear not to have taken similar measures. *Id.* ¶¶ 72-73.[8]

C. The Prior Permits Required Permittees to Consider the Elevated Risk of Flooding Posed by Climate Change Impacts

The Prior Permits already require Sprague to design, maintain, and operate the Terminals in a manner that avoids flooding and damage from the reasonably anticipated impacts of climate change during the facilities' design life by imposing a "good engineering practices" standard to the facilities' control measures and SWPPP preparation.

The Prior Permits state: "The SWPPP shall be prepared in accordance with good engineering practices and shall be consistent with the general provisions for SWPPPs included in the most current version of the MSGP." 2013 Permit § I.C.2.c; 2011 Permit § I.C. They also require that "[t]he SWPPP shall document the appropriate best

[8] In addition, as described in the attached Goldsmith Declaration, the berm surrounding the Sprague TRT Terminal on the seaward side is in substantial disrepair from erosion. Goldsmith Dec. ¶ 73. This damage places the Terminal at even greater risk than from the increasing risks that severe weather poses to the Terminal and is a violation of the 2011 Permit's requirement to follow "good engineering practices." As described more fully below, the Prior Permits require the permittees to regularly evaluate and prepare for changing risks posed by climate change. The visible weaknesses in the Sprague TRT Terminal's containment berm highlights why the permits place these continuing duties on permittees. CLF will separately be pursuing an enforcement action to address this violation of the 2011 Permit.

management practices (BMPs) implemented or to be implemented at the facility to ***minimize the discharge of pollutants*** in stormwater to waters of the United States and to satisfy the non-numeric technology-based effluent limitations included in this permit. At a minimum, these BMPs shall be consistent with the control measures described in the most current version of the MSGP." E.g., 2011 2013 Permit § I.C.4. The 2015 MSGP defined minimize to mean "reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable ***in light of best industry practice***." 2015 MSGP § 2 (emphasis added). The "good engineering practices" standard applies to the description of "all storm water controls, both structural and non-structural." 2013 Permit § I.C.2.c.iv; 2011 Permit § I.C.3.d. It also requires the permittee to evaluate and identify all potential sources of pollutants. 2013 Permit § I.C.2.c.iii; 2011 Permit § I.C.3.c.

With these provisions, both Prior Permits expressly incorporated the professional standard of an engineer into the permit's control measures requirements. As detailed in Dr. Goldsmith's Declaration, the control measures required by the Prior Permits are intended to minimize the potential for contamination of stormwater, stop the discharge of contaminated stormwater, and minimize the potential for any non-stormwater discharges from the facility. Goldsmith Dec. ¶ 77.

In light of the scientific consensus on the current and future increasingly severe precipitation and storms, "[b]y requiring Sprague to use "good engineering practices" to develop and implement control measures, the Prior Permits required Sprague to assess its vulnerabilities in light of climate change, develop engineering design plans to adequately address those vulnerabilities, and ultimately implement measures that will protect the Terminals and other surrounding communities from contamination from the Terminals." Goldsmith Dec. ¶ 80.

D. The permit conditions and standards in Section I.C.1.b.6 and Request for Comment of the Draft Permits are less stringent and therefore unlawful under the Clean Water Act's anti-backsliding prohibitions. 33 U.S.C. § 1342(o).

The CWA's anti-backsliding provision prohibits permits from having less stringent effluent limitations than the previous permit. *See* 33 U.S.C. § 1342(o). Section 402(o)(3) of the CWA specifically provides an absolute limitation on backsliding:

> This section of the CWA prohibits the relaxation of effluent limitations in all cases if the revised effluent limitation would result in a violation of applicable effluent guidelines or water quality standards, including antidegradation requirements. Thus, even if one or more of the backsliding exceptions outlined in the statute is applicable and met, CWA section

> 402(o)(3) acts as a floor and restricts the extent to which effluent limitations may be relaxed. The requirement affirms existing provisions of the CWA that require effluent limitations, standards, and conditions to ensure compliance with applicable technology and water quality standards.

U.S. ENVTL. PROT. AGENCY, *NPDES Permit Writers' Manual*, at 7-4 (Sept. 2010), https://www3.epa.gov/npdes/pubs/pwm_chapt_07.pdf.

The language proposed by EPA in Section I.C.1.b.6 violates Section 402(o) "by narrowing the scope of the control measures to exclude consideration of all of climate change related impacts, including sea-level rise and storm surge, and by basing a facility's risk designation solely on Federal Emergency Management Agency ('FEMA') flood risk assessments." Goldsmith Dec. ¶ 97. As discussed above and in Dr. Goldsmith's declaration, the Prior Permits require consideration of all climate change impacts and require a prospective risk assessment based on good engineering practices. Sole reliance on base flood elevations from often-outdated flood insurance maps not intended for regulatory use and that fail to consider climate change impacts is not consistent with good engineering practice and would simply guarantee disastrous pollutant discharges and public health and safety consequences. Accordingly, the permit conditions and standards in the Draft Permits are less stringent than those in the Prior Permits and adoption of the language proposed in Section I.C.1.b.6 of the Draft Permits is in violation of Section 402(o) of the CWA.

1. The proposed use of temporary measures to accommodate major storm events impermissibly weakens the permit because it assumes that facilities will flood, thereby implying more permanent measures are unnecessary.

As Dr. Goldsmith stated in her declaration, "Sections I.C.1.b.6.iii-vi weaken the Draft Permits by identifying temporary measures to be taken only in the event of an oncoming storm. Such temporary measures presuppose that i) storms will be infrequent enough to make temporary measures sustainable on a regular basis, ii) facilities will be able to predict in advance and with certainty which storms will pose a flooding risk, and iii) permanent infrastructure (such as warehouses for storing or roads for transporting necessary materials or equipment) is already out of harm's way in the event of a flood." Goldsmith Dec. ¶ 109. As a result, Section I.C.1.b.6 apparently takes for granted that the Terminals will be flooded by severe storms and does not address methods for preventing flooding.

However, building standards based on good engineering practice require permitted facilities be designed to ensure that flood waters cannot enter a facility, *e.g.*, by raising the facility above the anticipated flood level. Engineers designing industrial facilities cannot

satisfy their standard of care by assuming that facilities will flood and merely taking efforts to ensure that structures do not float away, especially when those facilities contain substances that are hazardous to human health or the environment. In fact, petrochemical terminals, like the Terminals here, often contain extensive soil contamination or other contaminants that can be mobilized by flood waters if allowed to enter the facility. As was required in the Prior Permits, engineers must design facilities to avoid any reasonably anticipated potential for flooding throughout the design life of the facility. Therefore, to avoid prohibited backsliding, Section I.C.1.b.6 should include a provision for control measures that prevent flood waters from entering the facility for any reasonably anticipated flooding that might occur during the design life of the facility. Failing to do so impermissibly weakens the Permits and violates Section 402(o) of the CWA.

2. The manner in which the Draft Permits proposes to rely on FEMA maps unlawfully weakens effluent limitations by narrowing the universe of flood data that must currently be considered under the Prior Permits.

Proposed Section I.C.1.b.6 constrains the flood-risk analysis solely to base flood elevations (BFE) "shown on the Federal Emergency Management Agency's Flood Maps and on the flood profiles, which can be access through https://msc.fema.gov/portal/search." Draft Permits § I.C.1.b.6, n.4. EPA is well aware that FEMA flood hazard designations are insufficient to capture present-day coastal flood risks, which include hurricane storm surge and nuisance or 'sunny-day' tidal flooding, to sites discharging industrial stormwater. *See generally*, Highfield, Wesley E., Norman, Sarah A., *et al.*, *Examining the 100-Year Floodplain as a Metric of Risk, Loss, and Household Adjustment*, Risk Anal. (May 22, 2012).

Moreover, the proposed use of the one percent flood level or BFE as calculated by FEMA also ignores Executive Order 11988 ("EO 11988"). EO 11988 applies to among other things, "Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities." EO 11988, 42 Fed. Reg. 26951 (May 24, 1977) at Section 1. It further provides that

> [e]ach agency shall take floodplain management into account when formulating or evaluating any water and land use plans and shall require land and water resources use appropriate to the degree of hazard involved. Agencies shall include adequate provision for the evaluation and consideration of flood hazards in the regulations and operating procedures for the licenses, permits, loan or grants-in-aid programs that they administer. Agencies shall also encourage and provide appropriate

> guidance to applicants to evaluate the effects of their proposals in floodplains prior to submitting applications for Federal licenses, permits, loans or grants.

EO 11988 § 2(c). The guidance for application of EO 11988 requires floodproofing and planning to at least the .2 percent or 500-year flood level for critical actions like permitting facilities that will discharge pollutants harmful to human health and the environment if flooded. *See* FEMA, *Guidelines for Implementing Executive Order 11988, Floodplain Management, and Executive Order 13690, Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*, available at: https://www.fema.gov/media-library/assets/documents/110377; FEMA, *Further Advice on Executive Order 11988 Floodplain Management*. 8. https://www.gsa.gov/cdnstatic/Advice_EO11988.pdf.

Concerns about potential repercussions from reliance on FEMA designations alone are especially grave given that climate change has resulted in a rise in mean sea level of 8–9 inches "since 1880, with about a third of that coming in just the last two and a half decades." Lindsey, Rebecca, *Climate Change: Global Sea Level*, NOAA (Nov. 19, 2019), *available at* https://www.climate.gov/news-features/understanding-climate/climate-change-global-sea-level. Climate change has also increased the frequency and intensity of severe weather and floods to levels far in excess of historic levels. For example, as Dr. Goldsmith discussed in her declaration, "Hurricane Harvey was a 500-year storm (in the traditional historic context) that devasted the Houston area, a slow-moving onslaught of rain that caught the city unawares and wreaked havoc on Houston homes and industrial facilities alike. Yet Harvey was not the first such storm to pass through Houston in 500 years. In fact, Harvey was the third such storm in three years to bombard the area, and it was Houston's very reliance on the 1-in-500 year probability that led the city to inadequately prepare, leading to unnecessary and disastrous consequences." Goldsmith Dec. ¶ 99 (citing Dara Lind, *The "500-year" flood: why Houston was so underprepared for Hurricane Harvey*, VOX (Aug. 28, 2017), https://www.vox.com/science-and-health/2017/8/28/16211392/100-500-year-flood-meaning.); *see also* Blake, Eric S. & Zelinsky, David, A., Nat'l Hurricane Ctr., *Tropical Cyclone Report: Hurricane Harvey*, 9 (2018), *available at* https://www.nhc.noaa.gov/data/tcr/AL092017_Harvey.pdf. (stating total damages from Harvey have been difficult to calculate in part because a majority of the residential flood loss claims came from outside the 500-year flood plain).

These climate change effects are expected to continue to increase for the foreseeable future. Moreover, as seen with Harvey in Houston, dramatically intensified development of impervious surfaces over the last several decades further confounds simple reliance on the FEMA designations. *See* Satija, Neena & Collier, Kiah, *Boomtown, Flood Town*, TEXAS TRIBUNE & PROPUBLICA (Dec. 7, 2016), *available at* https://projects.propublica.org/houston-cypress/. ("As wetlands have been lost, the amount of impervious surface in Harris County[, Texas] increased by 25 percent from

1996 to 2011," said Sam Brody, a Texas A&M University at Galveston researcher. "And there's no way that engineering projects or flood control regulations have made up for that change, he said."). Moreover, changes (or lack thereof) to a facility may increase the flood risk and cannot be taken into account by a FEMA FIRM. *See* Goldsmith Dec. ¶ 105. As a result, currently applicable spatial flood hazard designations significantly underestimate present-day risk. Indeed, the Army Corps of Engineers' Regulation 1100-2-8162 notes that historic data on water levels is insufficient, stating:

> [A]nalysts shall consider what effect changing relative sea level rates could have on design alternatives, economic and environmental evaluation, and risk. The analysis shall include, *as a minimum*, a low rate that shall be based on an extrapolation of the *historical tide gauge rate*, and intermediate and high rates that include future acceleration of [global mean sea level].

Army Corps of Engineers, Regulation No. 1100-2-8162, at B-6. Reliance on FEMA BFEs alone in Section I.C.1.b.6 and the request for comment artificially constrains the Prior Permits requirements and would be arbitrary and unreasonable given current scientific consensus regarding both the insufficiencies of the FEMA maps and the dramatic current and certainly impending effects of climate change.[9]

3. The Draft Permits does not require consideration of ALL climate change-related impacts and therefore relaxes effluent limitations in violation of the anti-backsliding provision.

Section I.C.1.b.6 of the Draft Permits is silent on climate change and its associated impacts and therefore unlawfully weakens effluent standards by narrowing the focus of preparedness to "major storm events that cause extreme flooding conditions." "[T]his language not only implies facilities need not consider prospective increases in risk based on increased frequency and severity of storms and sea-level rise, but, combined with the suggestion that FEMA FIRMs are an accurate measure of current risk, the language indicates that risk calculation based on historical data is sufficient to protect facilities, surrounding communities, and the environment in the event of a storm." Goldsmith Dec. ¶ 107.

[9] This is not to say that FEMA maps serve no purpose whatsoever; CLF is simply highlighting the limited nature of the maps as an engineering tool, especially when used in a vacuum with no additional information. As discussed below, FEMA designations represent basic information that must be considered when identifying present-day flood risks and risk over the design life of a facility.

Dr. Goldsmith further elucidates that "even if the language could be read to include consideration of the increased frequency of storms, both major and minor, and the increasingly severe nature of storms, the Draft Permits still fall short of the Prior Permits because they exclude consideration of sea-level rise and storm surge flooding. Storm surge flooding exacerbates and contaminates stormwater by infiltrating and flooding secondary containment structures and drainage areas, carrying debris that clogs drainage areas and creates backup, and potentially mobilizing heavy objects which may then destroy control measures and/or other structures." *Id.* at ¶ 108. This narrowing of the permit's scope necessarily creates less stringent effluent limitations than the Prior Permits and therefore constitutes prohibited backsliding.

E. Necessary Improvements to Avoid Prohibited Backsliding

Regardless of whether the proposed permit changes substantively impact permittees' duties, CLF appreciates that EPA recognizes the importance of severe weather and flooding risks to industrial infrastructure and is attempting to address the issue expressly in the Draft Permits. However, as discussed *supra*, the proposed changes hinder rather than further that purpose. To make the Draft Permits accord with the CWA's anti-backsliding provision, as well as with good science and engineering practice, below are necessary additions to carry out that purpose.

The changes EPA made in the recently signed, though not yet published, 2021 Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity ("Final 2021 MSGP") made progress in the right direction. The language in the draft of the MSGP largely mirrored the language in the Draft Permits here. EPA went further and made several important changes in the signed Final 2021 MSGP. *First*, it expanded the sources for flood risk information from FEMA firm maps to "all reasonably available data." Final 2021 MSGP, Fact Sheet at 36 ("Operators are encouraged to consider all reasonably available data and utilize various reference maps, including those published by FEMA, NOAA, and USGS, to help determine if their facility may experience an increased frequency of major storm events that could impact the discharge of pollutants in stormwater."); *see also* 2021 MSGP at 18 n.6. *Second*, it makes clear that the major storm provision applies to "hurricanes, storm surge, extreme/heavy precipitation, and flood events." 2021 MSGP at 18. It further clarifies that "heavy precipitation" applies both to increased total precipitation and precipitation occurring "in more intense and more frequent events." *Id.* n.5. *Third*, it makes clear that permittees must consider the impact of severe weather and describe in their SWPPPs their reasoning for the control measures that they chose to implement or not implement. *See id.* at 19 (requirement permittees to "document in [their] SWPPP . . . the considerations made to select and design control measures at [the] facility to minimize pollutants discharged via stormwater."); *id.* Fact Sheet at 35-36 ("EPA is not requiring operators to implement the controls given as examples in the permit but is requiring operators to consider the benefit of selecting and

designing control measures that reduce risks to their industrial facility and the potential impact of pollutants in stormwater discharges caused by major storm events.").

While these changes are a step in the right direction, they are not enough.

EPA should require applicants to report identified flood risks in their NOI application following consultation with resources and data sets applicable to present and future flood risks as discussed below. As with the prior permit, the Draft Permits require applicants to document their consideration of the design and selection of control measures in their SWPPP (Part 6.4), which includes consideration of the risks of major storm events and extreme flooding conditions. Consistent with good engineering practice and in order to support meaningful evaluation of an applicant's consideration of potential major storm and flood risk, EPA should make explicit that applicants must identify 1) the specific present-day flood risks and reasonably foreseeable flood risks over the design life of their facilities; 2) all of the information and analysis applicants have in their or their agents' possession relevant to flood risk; and 3) information and analysis relied upon for consideration and implementation of control measures to address identified risks.

EPA should also require applicants to self-designate exposure to flood risk if any part of their facility's footprint is located within a geographic area at risk of flooding based upon the best available flood projection information and models for that area. This must include consideration of all reasonably available data and information consistent with good engineering practice. For example, EPA should make explicit that applicants must, at a bare minimum, identify areas designated by FEMA as in or adjacent to a flood risk zone with a 0.2 percent or greater annual chance of flooding. Despite their underestimation of risk and flaws, the FEMA designations of statistical probability are based upon streamflow measurements and coastal flooding data, which are available for a widespread geography.

EPA should also make explicit that applicants must self-designate exposure to flood risk if any part of their facility's footprint is located within geographic areas that are projected by NOAA to be exposed to present-day or future risk of dry-weather tidal flooding, including so-called 'king tides,' 'sunny-day,' recurrent, and nuisance flooding. Tidal flooding is already impacting coastal regions, including industrial areas and public infrastructure such as storm sewers and roadways. NOAA has identified coastal areas that are exposed to present-day nuisance flooding, based upon decades of observed data. The risks of coastal nuisance flooding are also increasing due, for example, to observed land subsidence and sea level rise. The coincidence of high tidal conditions with major storms and related flood conditions also has the potential to exacerbate the risk of harm to industrial sites. Therefore, EPA should make clear that applicants must identify a site's risk of exposure to nuisance flooding (in accordance with NOAA modeled projections) and consider accordingly the necessary control measures to account for those risks.

Nevertheless, identification of flood risks based solely upon the aforementioned analyses and designations will not adequately reflect the universe of present-day flood risk at the Terminals, which are constructed with a long service life. There is no substitute for site-specific flood data and future data-driven projections; accordingly, EPA should also require applicants to self-designate exposure to flood risk if any part of their facility has been flooded within the last 20 years. The past incidence of flooding is another indicator of present-day risk and should be disclosed by applicants and should also serve as a mandatory basis for selection and design of control measures.

The Permits should be explicit that the permittees must consider a range of alternatives when designing, operating, and maintaining the Terminals throughout their design life to prevent discharging pollutants in the event of flooding. The characteristics of the individual Terminals, including their location, the type of pollutants maintained, the amount of impermeable surface nearby, to name but a few, will determine the scope of choices available, from building floodgates for use in heavy storms, to running a facility outside "the rainy" season only, to building a new facility away from coastal and riverine resources to abate the flood risk dramatically. *See* Goldsmith Dec. ¶ 67. The Permits must require the Terminals to develop a resilience plan, using the best data available consistent with good engineering practice, to assess its flood risk and appropriate flood mitigation options in both the near and long-term. In some instances, it must be acknowledged that facilities located in harm's way pose too great a danger to the surrounding area and community and retreat will be necessary in order to meet environmental standards and protect the public health, safety, and welfare. *See id.* ¶ 119. Therefore, the Permits must require the permittee to consider i) the range of possible floodproofing mechanisms; ii) how those mechanisms apply to the facility; and iii) implement those measures in a way that minimizes risk over the permit term but ultimately considers a permanent, climate resilient solution. Additionally, Section I.C.1.b.6 should make clear that the evaluation of risks requires the permittee to consider the quantity and characteristics of pollutants housed at the site when determining the appropriate control measures.

The Permits must also require that the Terminals maintain safe, dry access via a land route throughout flooding events. Ingress and egress to implement emergency measures within the confines of a facility is fundamental to assuring that pollutants will not be discharged during flood events and to protect critical infrastructure. Even if required flood-proofing measures are fully implemented, a lack of dry access to the facility dramatically increases the risk that discharges and releases will occur. For example, a facility located significantly below the base flood elevation and hundreds of yards away from the inland extent of a readily anticipated flood event might end up completely surrounded by flood or surge waters with large waves and dangerous currents. While a desktop design exercise might show adequate facility design to "flood proof" the facility, the chaotic reality of such severe events makes it absolutely critical to have safe, dry access to implement response actions during such events to prevent catastrophic pollutant releases.

If EPA adopts the proposed requirements described above in the final permits, as it must to prevent backsliding, then the Agency will have more robust information and analysis with which to deliver compliance assistance and for the purpose of revising future permit requirements responsive to flood risks.

II. The Testing for PAHs Must Be Strengthened

The monitoring requirements for PAHs in the Draft Permits are grossly insufficient to ensure that the Terminals do not discharge PAHs that would cause or contribute to a violation of Massachusetts Water Quality Standards ("WQS").

Group I PAHs are potent animal carcinogens, and probable human carcinogens. Roseen Dec. ¶ 23. Meanwhile Group II PAHs can affect the impact of carcinogenic substances on the human body. *See, e.g.,* Sprague TRT Permit, Fact Sheet at 25. As explained in the Draft Permits, "Due to historically low but persistent PAH concentrations, the 2011 Permit included monitor-only requirements . . . for the seven Group I PAHs and naphthalene, sampled quarterly." *See, e.g.,* Sprague TRT Permit, Fact Sheet at 25. The Prior Permits set no numeric effluent limitations for any PAHs. As explained in the Sprague TRT Permit, the Prior Permits' monitoring "data quality for PAHs is low because the ML used in measuring PAHs was 10 µg/L during the last permit term." Sprague TRT Permit, Fact Sheet at 25.

The Draft Permits require that discharges from the Terminals "shall not cause a violation of the water quality standards of the receiving water." *See, e.g.,* Sprague TRT Permit § I.A.2. However, EPA determined that the data from the Prior Permits was insufficient to make a statistical determination regarding "whether the concentrations of PAHs in the effluent have a reasonable potential to cause or contribute to an excursion above the water quality criteria." Sprague TRT Permit, Fact Sheet at 25. However, EPA determined that "there is reasonable potential for the effluent to cause or contribute to an excursion above WQC for Group I PAHs" based on the fact that "oil terminals are known sources of PAHs, and oil terminals have contributed to water quality impairments in other Massachusetts waterbodies."

As a result, the Draft Permits moved in the right direction by establishing a monthly average numeric effluent limitation for benzo(a)pyrene, a Group I PAH, of 0.018 µg/L. However, the remaining provisions for PAH monitoring fall short.

First, the Draft Permits establish a minimal level ("ML") for PAH testing of 0.1 µg/L for Group I PAHs and 5 µg/L for Group II PAHs. As described in the Roseen Declaration, these MLs are far above the appropriate method detection limit of the relevant tests and labs in the area of the Terminals test samples for PAH levels at substantially lower detection limits than the MLs established in the Draft Permits. Roseen Dec ¶¶ 19-25. Therefore, Dr. Roseen concludes that the MLs do not meet the requirement that tests be

"sufficiently sensitive." *Id.* ¶ 24; *see also id.* ¶ 25. Indeed, as explained by Dr. Roseen, the 0.1 µg/L ML for benzo(a)pyrene "would make it impossible to ensure compliance with Massachusetts Water Quality Standards." *Id.* ¶ 21.

Second, the Draft Permits only establish a numeric effluent limitation for benzo(a)pyrene and no other Group I PAHs. The Draft Permits provide no explanation for why the effluent limitations are limited solely to benzo(a)pyrene despite EPA's conclusion that "there is reasonable potential for the effluent to cause or contribute to an excursion above WQC for Group I PAHs."

Third, the sampling frequency for PAHs is insufficient to satisfy the Permits' requirement that facilities "must control any pollutant or pollutant parameter . . . which the permitting authority determines are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to the excursion above any water quality standard." Roseen Dec. ¶ 27. While setting an *average* monthly numeric effluent limitation for benzo(a)pyrene, the Draft Permit only requires a single monthly grab sample be taken. Similarly, the Draft Permits require a single annual sample of the remaining PAHs. However, as Dr. Roseen explains, "the Draft Permit sampling frequencies are grossly insufficient to determine average monthly or average annual PAH concentrations for the purpose of assessing the risk of causing or contributing to excursions above water quality criteria." Roseen Dec. ¶ 32. Given the inherent deficiencies in using grab sampling, reliable sampling cannot be based on a single sample; instead, multiple samples are necessary to improve the reliability of the sampling. *See* Roseen Dec. ¶¶ 29, 31.

Fourth, the Draft Permits unreasonably reduced the sampling frequency for all PAHs, other than benzo(a)pyrene, from once per quarter to once per year. This reduction in sampling frequency cannot be squared with EPA's conclusions that the sampling under the Prior Permits was insufficient to properly evaluate PAH concentrations because of the 10 µg/L ML established under the Prior Permits. It is non-sensical to recognize the insufficiency of the prior quarterly sampling while at the same time reducing the sampling frequency in the Draft Permits by 75%.

CONCLUSION

For the reasons described above, (i) the proposed Section I.C.1.b.6 improperly narrows the duties imposed on permittees by the "good engineering practice" standard and needs to be revised to avoid impermissible backsliding, (ii) the minimum limits for PAHs are too high to ensure that water quality standards are not violated, and (iii) the sampling frequencies for PAHs are insufficient to evaluate the actual concentrations of PAHs in the Terminals' discharges.

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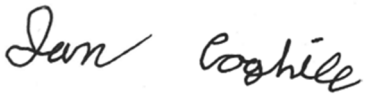

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BIBLIOGRAPHY

Cases

Federal Defendants' Objections to Findings and Recommendation of Magistrate Judge, *Juliana v. United States*, 6:15-cv-01517-TC, ECF No. 74 (D. Or. May 2, 2016).

Statutes and Regulatory Documents

33 U.S.C. § 1342(o)

Executive Order 11988, 42 Fed. Reg. 26951 (May 25, 1977)

United States Army Corps of Engineers. "Guidance for Incorporating Climate Change Impacts to Inland Hydrology in Civil Works Studies, Designs, and Projects" (Sept. 10, 2018), https://www.wbdg.org/ffc/dod/engineering-and-construction-bulletins-ecb/usace-ecb-2018-14

United States Army Corps of Engineers. "Incorporating Sea Level Change in Civil Works Programs." Engineer Regulation No. 1100-2-8162. (Dec. 31, 2013). https://www.publications.usace.army.mil/Portals/76/Users/182/86/2486/ER_1100-2-8162.pdf?ver=2019-07-02-124841-933.

United States Army Corps of Engineers. "North Atlantic Coast Comprehensive Study (NACCS) Coastal Storm Model Simulations: Waves and Water Levels." Report no. 15-14. ERDC/CHL TR. U.S. Army Engineer Research and Development Center, Coastal and Hydraulics Laboratory, 2015. Accessed June 1, 2020. https://usace.contentdm.oclc.org/digital/collection/p266001coll1/id/3681/.

United States Environmental Protection Agency (EPA). "Climate Impacts in the Northeast." EPA. Last modified January 19, 2017. https://19january2017snapshot.epa.gov/climate-impacts/climate-impacts-northeast_.html#Reference%201.

United States Environmental Protection Agency (EPA). "Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act; Final Rule." 74 Fed. Reg. 66, 496 (Dec. 15, 2009). https://www.govinfo.gov/content/pkg/FR-2009-12-15/pdf/E9-29537.pdf.

United States Environmental Protection Agency (EPA). "Framework for Protecting Public and Private Investment in Clean Water Act Enforcement Remedies." EPA, n.d. https://www.epa.gov/sites/production/files/201612/documents/frameworkforprotectingpublicandprivateinvestment.pdf.

United States Environmental Protection Agency. "NPDES Permit Writers' Manual." (2015) https://www.epa.gov/sites/production/files/2015-09/documents/pwm_chapt_07.pdf.

United States Federal Emergency Management Agency (FEMA). "Building Higher in Flood Zones: Freeboard – Reduce Your Risk, Reduce Your Premium." FEMA, n.d. https://www.fema.gov/media-library-data/1438356606317-d1d037d75640588f45e2168eb9a190ce/FPM_1-pager_Freeboard_Final_06-19-14.pdf.

United States Federal Emergency Management Agency (FEMA), "Guidelines for Implementing Executive Order 11988, Floodplain Management, and Executive Order 13690, Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input." (Oct. 2015) https://www.fema.gov/media-library/assets/documents/110377

United States Federal Interagency Floodplain Management Task Force. "A Unified National Program for Floodplain Management," (1994), https://www.fema.gov/media-library-data/20130726-1733-25045-0814/unp_floodplain_mgmt_1994.pdf

United States Global Change Research Program. "The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment." https://health2016.globalchange.gov/.

United States Global Change Research Program. "Third National Climate Assessment." 2014. https://www.globalchange.gov/nca3-downloads-materials.

United States Government Accountability Office. "Climate Information: A National System Could Help Federal, State, Local, and Private Sector Decision Makers Use Climate Information." GAO-16-37 (November 2015). https://www.gao.gov/assets/680/673823.pdf.

Secondary Sources

AECOM. "Press Release: Climate change and adaptation experts detail strategies in preparing for climate-related hazards and disasters." ASCE, June 25, 2019. https://aecom.com/press- releases/climate-change-and-adaptation-experts-detail-strategies-in-preparing-for-climate- related-hazards-and-disasters/.

Arkema. "COP21: Arkema is Committed to Climate." Arkema. http://www.arkema.com/en/social-responsibility/cop21/.

ASCE. "Climate-Resilient Infrastructure: Adaptive Design and Risk Management." Manual of Practice, MOP-140.

ASCE. "Policy Statement 360 - Impact of Climate Change." American Society of Civil Engineers (ASCE). https://www.asce.org/issues-and-advocacy/public-policy/policy-statement-360---impact-of-climate-change/.

ASCE. "2017 Infrastructure Report Card: America's Infrastructure Grade." American Society of Civil Engineers (ASCE). https://www.infrastructurereportcard.org/americas-grades/.

ASTM International, Standard E3032-15: Standard Guide for Climate Resiliency Planning and Strategy (2016).

Bank of England. "A framework for assessing financial impacts of climate change." Bank of England: Prudential Regulation Publications, May 2019. www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/publication/2019/a-framework-for-assessing-financial-impacts-of-physical-climate-change.pdf.

Bank of England. "Climate change: why it matters to the Bank of England." Bank of England. https://www.bankofengland.co.uk/knowledgebank/climate-change-why-it-matters-to-the-bank-of-england.

Bayer. "Bayer Sustainability Report 2019." Bayer: Sustainability Report, February 27, 2020. www.bayer.com/en/sustainability-reports.aspx.

BlackRock. "Sustainability as BlackRock's New Standard for Investing." BlackRock. https://www.blackrock.com/corporate/investor-relations/blackrock-client-letter.

BlackRock, Larry Fink. Letter, "A Fundamental Reshaping of Finance," n.d. https://www.blackrock.com/corporate/investor-relations/larry-fink-ceo-letter.

Blake, Eric S. & Zelinsky, David A., Nat'l Hurricane Ctr. "Tropical Cyclone Report: Hurricane Harvey." (2018). https://www.nhc.noaa.gov/data/tcr/AL092017_Harvey.pdf.

City of Quincy. "City of Quincy Multi-Hazard Mitigation Plan." City of Quincy, (Apr. 2, 2019). https://www.quincyma.gov/civicax/filebank/blobdload.aspx?t=49408.06&BlobID=33813.

D'Angelo, Chris. "Climate Change Is Fueling Stronger Hurricanes, Federal Study Finds." *Huffington Post*, May 19, 2020. https://www.huffpost.com/entry/hurricanes-climate-change-noaa-study_n_5ec3e9ecc5b68a8b77d88276?guccounter=1.

DuPont. "DuPont de Nemours, Inc. Statement on Climate Change." DuPont. https://www.dupont.com/position-statements/climate-change.html.

Exponent. "Extreme-Weather-Related Risk Management." Exponent, 2018. https://www.exponent.com/knowledge/thought-leadership/2018/12/extremeweatherrelated-risk-management/?pageSize=NaN&pageNum=0&loadAllByPageSize=true.

ExxonMobil. "Energy and Carbon -- Managing the Risks." ExxonMobil, n.d. http://www.lawandenvironment.com/wp-content/uploads/sites/5/2014/04/Report-Energy-and-Carbon-Managing-the-Risks1.pdf.

Geosyntec. "Resilience and Adaptation." Geosyntec. https://www.geosyntec.com/markets/resilience-and-adaptation.

Jupiter. "Turning Risk Into Opportunity: Visionary Customers Take Action to Address Future Peril." Jupiter. https://jupiterintel.com/customers/.

Kossin, James P., et al., "Global increase in major tropical cyclone exceedance probability over the past four decades," PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES (Apr. 10, 2020), in *Appendix at Exhibit 1*.

Lind, Dara. "The '500-year' flood, explained: why Houston was so underprepared for Hurricane Harvey." VOX, August 28, 2017. https://www.vox.com/science-and-health/2017/8/28/16211392/100-500-year-flood-meaning.

Milly, P.C.D., Betancourt, Julio, *et al.* "Stationarity is Dead: Whither Water Management?" 319 SCIENCE 5863, 573–74 (Feb. 1, 2008).

National Academies of Sciences, Engineering, and Medicine. "Improving the EPA Multi-Sector General Permit for Industrial Stormwater Discharges." Washington, DC: The National Academies Press, 2019. Accessed June 1, 2020. https://doi.org/10.17226/25355.

Royal Dutch Shell, PLC. "Sustainability Report." Shell, 2016. https://reports.shell.com/sustainability-report/2016/servicepages/download-centre.html.